PPARα and IL-17A responses associated with the intestinal immune response against the protozoan parasite *Giardia muris.*

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The protozoan parasite *Giardia duodenalis* (*lamblia*) is one of the most commonly found intestinal pathogens in mammals, including humans. Recent research in cattle revealed the activation of the peroxisome proliferator-activated receptors α and γ as part of the intestinal response against this parasite. The activation of PPARs can exert an anti-inflammatory effect by transrepressing the activity of several transcription factors, such as nuclear factor-κB (NF-κB) and activator protein 1 (AP1). The aim of the current study was to further analyze the role of these receptors in the host-parasite interaction and their possible impact on the development of protective immunity using a *Giardia muris*–mouse infection model. Analysis of the intestinal response in C57BL/6 mice indicated the activation of PPARα in the enterocytes soon after the initial contact with this parasite, characterized by the transcriptional upregulation of PPARα itself and several classic downstream target genes such as PLTP and CPT-1. In contrast to cattle, no PPARγ activation was observed in mice and the PPARα response disappeared 1 to 2 weeks post infection, followed by a strong Th17 response with a high upregulation of IL-17A in the mucosa, peaking at week 3 post infection. The importance of IL17A in orchestrating the protective immune response was unequivocally demonstrated in an infection trial using IL17 receptor A KO mice. Whereas in wild type mice cyst secretion dropped significantly after 3 weeks of infection, the IL17RA-KO mice were unable to clear the infection. The regulation of the PPARα response and its impact on the protective IL-17A response is currently under further investigation.